Running Head: THE NEED FOR HEALTH PROMOTION

The Need for Health Promotion for Adults with Blindness or Low Vision

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Abstract

The importance of health promotion interventions for persons with disabilities has recently been recognized, but adults with blindness and low vision have not received any attention in this area. What is currently known about this population in terms of self-reported health, overweight and obesity, and levels of physical activity is presented. Conclusions about the need for health promotion activities based on this knowledge are provided, and suggestions for how to implement health promotion activities or interventions with this population are offered.

The Need for Health Promotion for Adults with Blindness or Low Vision

Adults with blindness or low vision are substantially more likely to report poor, fair, or worsening health compared to the general population (Capella-McDonnall, 2005; Tielsch, Sommer, Katz, Quigley, & Ezrine, 1991; Wang, Mitchell, & Smith, 2000). Two things that may contribute to this inferior health are being overweight or obese and not being physically active. In this article I will first present a literature review on the problems of overweight and obesity and lack of physical activity in the general population, and also what is known in these areas specific to persons with disabilities and persons with blindness or low vision. Next, I will discuss past interventions and the new focus on health promotion for persons with disabilities. Finally, I will discuss ways in which health promotion activities or interventions could be implemented with adults with blindness or low vision. Within this presentation, I will use the International Classification of Functioning, Disability, and Health (ICF; World Health Organization, 2001) as a conceptual framework to help explain the need for health promotion activities with this population and present potential outcomes of health promotion activities.

The Problems

The Overweight and Obesity Epidemic

Overweight and obesity has increased at an alarming rate in recent years in the United States, as well as across the world. The rate of increase has been so significant that overweight and obesity is now considered one of the most important public health problems of our time (Simons-Morton, Obarzanek, & Cutler, 2006). Body Mass Index (BMI), which is weight in kilograms divided by the height in meters squared, is the traditional measure to determine overweight (BMI =/> 25) and obesity (BMI =/> 30). The prevalence of obesity among adults remained relatively stable at approximately 13 to 15% between the years 1960 to 1974, but

increased substantially to 22.9% in 1988-1994, and increased significantly again in 1999-2002 to 30.4% (Flegal, Carroll, Ogden, & Johnson, 2002; Hedley et al., 2004). An additional 34.7% of the population was overweight in 1999-2002, bringing the total percentage of the population who are overweight or obese to 65.1% (Hedley et al., 2004), representing a significant increase over the 55.9% reported in 1988-1994 (Flegal et al., 2002). Using data from the Framingham Heart Study, a community-based prospective cohort study, long-term estimated risks for overweight and obesity in the population are extremely high, with more than 8 in 10 individuals expected to be overweight or more, and 1 in 2 expected to be obese (Vasan, Pencina, Cobain, Freiberg, & D'Agostino, 2005).

There is no reason to believe that the rates of overweight and obesity would be any lower for persons with disabilities, and in fact there is considerable evidence that the rates are higher among this group (CDC, 2002; Rimmer & Wang, 2005; U.S. Department of Health and Human Services [USDHHS], 2000; Weil et al., 2002). In a study utilizing 1998 and 1999 Behavioral Risk Factor Surveillance System data from eight states and the District of Columbia, the CDC reported that persons with disabilities had substantially higher rates of obesity than those without disabilities (i.e., 27.4% versus 16.5%; CDC, 2002). Weil et al. (2002), using 1994-1995 National Health Interview Survey data, also found that persons with disabilities were significantly more likely to be obese compared to persons without disabilities. They included analyses by disability group; the odds of being obese for persons with blindness or low vision were 1.5 times greater than for the general population. Rimmer and Wang (2005), using data from a sample of 306 persons with disabilities that included measured height and weight, also provided evidence that persons with disabilities have substantially higher rates of overweight, obesity, and extreme obesity compared to prevalence rates reported for the general population.

Overweight and obesity represent a major public health concern because they are associated with a multitude of medical conditions and negative psychosocial outcomes, as well as increased mortality. Medical conditions that have consistently been linked to overweight and obesity include (a) type 2 diabetes, (b) heart disease, (c) high blood pressure, (d) stroke, (e) certain types of cancer, including colon, prostate, breast, and endometrial, (f) osteoarthritis, (g) pulmonary problems including asthma and sleep apnea, (h) liver disease, (i) gallbladder disease and gallstones, and (j) dyslipidemia (CDC, 2005a; USDHHS, 2001, 2004). In addition, overweight and obesity have been associated with an increased risk for eye diseases or with a faster progression of certain eye diseases, such as macular degeneration, maculopathy, cataracts, glaucoma, and diabetic retinopathy (e.g., Glynn, Christen, Manson, Bernheimer, & Hennekens, 1995; Habot-Wilner & Belkin, 2005; Klein, Klein, Lee, & Jensen, 2001; Seddon, Cote, Davis, & Rosner, 2003). There are also negative psychological and social effects related to being obese (Kolotkin, Meter, & Williams, 2001; USDHHS, 2001). Obesity is stigmatized in our society, even by people who are overweight or obese (Friedman et al., 2005; Latner, Stunkard, & Wilson, 2005).

The combined direct and indirect cost of obesity in the United States was estimated to be $117 billion in 2000 (USDHHS, 2001). Medical spending related to overweight and obesity was estimated to account for 9.1% of total U.S. medical expenditures in 1998, rivaling medical spending associated with smoking (Finkelstein, Fiebelkorn, & Wang, 2003). There is substantial evidence that losing weight is effective in reducing the health risks associated with overweight and obesity (NHLBI Obesity Education Initiative, 1998), as well as the associated medical costs (Oster, Thompson, Edelsberg, Bird, & Colditz, 1999).

Lack of Physical Activity

Another major problem, and one that is linked to the obesity epidemic, is the lack of physical activity among the population of the United States (CDC, 2005b). Physical activity is known to promote psychological well-being and build and maintain healthy bones, muscles, and joints (USDHHS, 2002). Physical inactivity, like overweight and obesity, has been associated with several medical conditions, specifically cardiovascular disease, high blood pressure, colon and breast cancer, type 2 diabetes, osteoarthritis, osteoporosis, and depression (USDHHS, 1996, 2002). Lack of physical activity can result in an increase in functional decline and a greater occurrence of secondary conditions among persons with disabilities (e.g., Dunlop et al., 2005; Rimmer, 1999; USDHHS, 2000). The U.S. Department of Agriculture's (2005) dietary guidelines include three different recommendations for amount of physical activity, depending on the goal. To reduce the risk of chronic disease, a minimum of 30 minutes of moderate-intensity activity on most days of the week is necessary, with the recommendation that greater health benefits can be obtained by engaging in activities that are more intense or of longer duration. To manage body weight and prevent weight gain, 60 minutes of moderate- to vigorous-intensity activity on most days of the week is recommended. To sustain weight loss, at least 60 to 90 minutes of daily moderate-intensity activity is advised. The majority of the U.S. population does not even engage in the minimum recommended amount of physical activity (CDC, 2005b).

Lack of physical activity is known to be a greater problem among persons with disabilities (USDHHS, 2000). It is a problem that has been recognized by and received attention from researchers in the field of blindness and low vision for many years, primarily with a focus on children and adolescents. It is well-documented that persons with blindness or low vision are less physically active and in poorer physical condition than sighted persons (e.g., Hopkins, Gaeta, Thomas, & Hill, 1987; Kobberling, Jankowski, & Leger, 1991; Kozub & Oh, 2004;

Lieberman & McHugh, 2001; Longmuir & Bar-Or, 2000; Short & Winnick, 1986; Skaggs & Hopper, 1996). Compared to other disability groups, children and adolescents with blindness or low vision, along with children and adolescents with physical disabilities, were the most inactive, with 39% classified as sedentary and only 27% classified as active (Longmuir & Bar-Or, 2000). Other authors have provided evidence that older children and adolescents with blindness or low vision are less physically active than their younger counterparts (Ayvazoglu, Oh, & Kozub, 2006; Oh, Ozturk, & Kozub, 2004). Although virtually all of the studies in this area have been conducted with children and adolescents, it seems safe to assume that these trends continue into adulthood, given the lack of access to recreation and athletic programs often experienced by this population (Ponchillia, 1995), the lack of help or encouragement this population receives in developing physical recreation skills or habits (Sherrill, Rainbolt, & Ervin, 1984) and the real and perceived barriers to exercise experienced by them and other persons with disabilities (Rimmer, Rubin, & Braddock, 2000; Rimmer, Rubin, Braddock, & Hedman, 1999; Stuart, Lieberman, & Hand, 2006; USDHHS, 2000). Twenty years ago Hanna (1986) stressed the need to develop strategies that enhance the physical fitness of persons with blindness or low vision; today, it seems little has changed in this area and less attention is being afforded to it in the literature.

Conceptual Framework: Defining the Population and Explaining the Problem

The International Classification of Functioning, Disability, and Health (ICF; World Health Organization [WHO], 2001) can be used as a conceptual framework to define the population of interest, explain their need for health promotion activities, and describe potential outcomes for these activities. The ICF is a multi-purpose classification system of health and health-related domains classified from body, individual, and societal perspectives via two lists:

(a) body functions and structures and (b) activities and participation. ICF also takes contextual factors that interact with these components into consideration (WHO, 2002). Contextual factors consist of two components: (a) environmental factors, which are classified in the system, and (b) personal factors, which are not classified in the system. The ICF is based on the biopsychosocial model, which is an integration of the medical and social models of disability, and it represents a paradigm shift from an emphasis on disability to a focus on functioning and health.

The population can be defined as persons who experience an impairment in seeing, which is classified as a body function in ICF (i.e., b210). This could include difficulty in one or more of the following classified areas: visual acuity function, visual field function, quality of vision, or seeing functions, other specified or unspecified. Specific etiologies that may cause this impairment in seeing include, but are not limited to, diabetic retinopathy, retinitis pigmentosa, glaucoma, cataracts, macular degeneration, and trauma. This population has traditionally been referred to as persons with blindness or low vision or persons with visual impairments, while the terminology of the ICF would be "persons with impairments in seeing" or "persons with sight impairments"

As a result of a body function impairment in seeing, persons may experience activity limitations or participation restrictions in several of the activity and participation areas described in the ICF. Some of these relate directly to the sight impairment, (e.g., watching [d110], receiving communication via nonverbal or written messages [d315 or d325], and driving [d475]) while some will be indirectly associated with the impairment (e.g., walking [d450], managing diet and fitness [d5701], preparing meals [d630], shopping [d6200], and engaging in community life [d910] and recreation and leisure [d920]). In addition, environmental barriers may exist for this population in ICF areas such as attitudes of individuals and society (e.g., e425, e445, e450,

e455, e460), communication services, systems, and policies (e535), and transportation services, systems, and policies (e540).

The activity limitations and participation restrictions and associated environmental barriers caused by an impairment in seeing can contribute to problems with overweight and obesity. For example, difficulty in preparing meals limits the breadth of food options available to a person, often resulting in a greater amount of "convenience foods" being consumed, which tend to be higher in fat and calories. Persons who cannot read the small print on nutrition labels may have difficulty obtaining information about the nutritional contents of foods, making it more challenging for them to make good food choices. Inability to get to the grocery store independently or difficulty in getting to the grocery store may limit the frequency of shopping, making healthier fresh food options less viable, and again encouraging the consumption of more pre-prepared, convenience foods. Activity limitations in walking and environmental barriers such as transportation and lack of accessible exercise equipment can cause difficulty in being physically active, which is a key component to maintaining a healthy weight.

Past Interventions and Support for their Importance

Overweight and Obesity

The large and rapidly increasing numbers of people in the United States who are overweight or obese and the risk factors associated with these conditions, along with the knowledge that losing weight can reduce associated morbidity, underscore the importance of interventions to address this problem. A substantial number of interventions have been reported in the literature and several major reviews and evaluations of published interventions have been conducted (Jain, 2004; McTigue et al., 2003; NHLBI Obesity Education Initiative, 1998). According to these reviews, lifestyle interventions, which include changes in diet, physical

activity, and/or behavioral therapy, are the most popular. They have been shown to promote modest weight loss in participants. Specific components of lifestyle interventions found to be associated with greater weight loss or more sustained weight loss by these comprehensive reviews were: the combination of dietary changes, increased physical activity, and behavior therapy; longer-term and higher intensity (more frequent contacts) interventions; and maintenance strategies. No obesity interventions specific to adults with blindness or low vision were located in the literature.

Physical Activity

Although there is evidence that persons with blindness or low vision are less physically active and in poorer physical condition than sighted persons, little seems to have been done to address the problem. Only two interventions specific to increasing physical activity for adults with blindness or low vision could be located in the literature. One was a walking program for older adults attending a rehabilitation center (Weitzman, 1985) and the other involved aerobic exercise instruction in a mainstream aerobics class for totally blind participants (Ponchillia, Powell, Felski, & Nicklawski, 1992). Although both involved small samples (14 and 3 respectively), they did offer some evidence that persons with blindness or low vision could be successful with traditional exercises, given the opportunity for involvement. Physical activity interventions for children with visual impairments, specifically summer sports camps, seem to be more common than interventions for adults (e.g., Ponchillia, Armbruster, & Wiebold, 2005; Shapiro, Moffett, Lieberman, & Dummer, 2005).

Health Promotion for Persons with Disabilities

Persons with disabilities, including persons with blindness or low vision, are more likely to report poorer health than the general population (Horowitz, Brennan, & Reinhardt, 2005;

Jacobs, Hammerman-Rozenberg, Maaravi, Cohen, & Stessman, 2005; Rimmer, 1999; Wang et al., 2000). Health promotion for persons with disabilities has appeared as a national priority in recent years (Rimmer & Braddock, 2002; USDHHS, 2000). The notion that health can co-exist with disability has gained acceptance, and the importance of maximizing the health of persons with disabilities has been established. In 2005, the Surgeon General of the United States made a call to action to improve the health and wellness of persons with disabilities (USDHHS, 2005).

While hundreds, if not thousands, of interventions related to health promotion (including weight loss and physical activity) for the general population have been reported in the literature, interventions specific to persons with disabilities have been rather limited. Recently, more research attention has been focused on this population. The interventions reported have traditionally focused on specific disability groups. For example, interventions have been reported for persons with multiple sclerosis (Petajan et al., 1996; Stuifbergen, Becker, Blozis, Timmerman, & Kullberg, 2003), physical disabilities or mobility impairments (Chen, Henson, Jackson, & Richards, 2006; Hughes, Nosek, Howland, Groff, & Mullen, 2003; Ravesloot, Seekins, & White, 2005), osteoarthritis (Ettinger et al., 1997; Messier et al., 2004), intellectual disabilities (Marshall, McConkey, & Moore, 2003), and stroke survivors (Rimmer et al., 2000). However, interventions for adults with blindness or low vision have been limited, as mentioned previously. While research with other groups of persons with disabilities has received increasing attention recently, research is significantly lacking in the area of health promotion for persons with blindness or low vision.

Governmental Support for the Importance of Health Promotion Activities and Interventions

Evidence for lower levels of physical activity and a greater likelihood of obesity among persons with blindness or low vision has been provided in the literature. These problems, among

persons with disabilities in general, began receiving national attention with *Healthy People 2010* (*HP2010*), this country's comprehensive health promotion and disease prevention agenda. *HP2010* includes two overarching goals and hundreds of focus area goals for the nation to meet by the year 2010. Health promotion activities or interventions can address both of the overarching goals of *HP2010,* which are to (a) increase quality and years of healthy life and (b) eliminate health disparities among different segments of the population.

Health promotion activities and interventions for persons with blindness or low vision can specifically addresses *HP2010*'s priority area of *disparities in health among people with disabilities*, along with goals in other focus areas. For example, in the area of *educational and community-based programs, HP2010* calls for an increase in the quality, availability, and effectiveness of community-based health promotion programs. In addition, the importance of effective programming being tailored to individual considerations, such as disability status, has been emphasized. One of the gaps in research identified by this focus area of *HP2010* is lack of appropriate approaches for disadvantaged and special populations, such as persons with disabilities. Such activities or interventions should also directly address the overall goals under the focus areas of *nutrition and overweight*: "to promote health and reduce chronic disease associated with diet and weight" (p. 19-3) and *physical activity and fitness*: "improve health, fitness, and quality of life through daily physical activity" (p. 22-3).

Addressing the Problems with this Population

With the substantial evidence that exists for the poorer health, lack of physical activity, and higher levels of overweight and obesity for persons with blindness or low vision, the need for health promotion activities with this population is clear. However, how to implement such

activities or interventions must be considered. Using the ICF framework, potential outcomes for these interventions are presented first, followed by several options for implementation.

Conceptual Framework: Targeting Outcomes

Health promotion activities or interventions may target improvements in several areas covered by the ICF, including activity limitations, participation restrictions, and personal factors of individual participants. The primary activity limitations and participation restrictions that could be positively affected by a health promotion intervention are managing diet and fitness (d5701), recreation and leisure (d920), and community life (d910). Under the area of personal factors, health promotion activities or interventions should be capable of having a positive impact on other health conditions, fitness and lifestyle habits, self-efficacy, and health-related quality of life. In the area of environmental factors, an intervention for this population may need to address facilitating transportation services (e5400) for participants, and could focus on facilitating support by others (e.g., family [e310 or e315], friends [e320], community members [e325], and professionals [e355]) for a healthy lifestyle.

Options for Implementation of Health Promotion Activities or Interventions

Rehabilitation Setting

One option for implementing health promotion interventions with this population is in a rehabilitation setting. If rehabilitation consumers are in need of assistance with losing weight, becoming more physically active, and/or maintaining a healthy lifestyle, a rehabilitation setting would provide an excellent avenue to provide this assistance. An intervention in such a setting should include the opportunity for consumers to: (a) learn about different physical activity options and try several of them, (b) receive information about healthy eating habits, (c) receive information about nutritional issues specific to persons with blindness or low vision, (d) learn

about healthy cooking and (e) prepare healthy meals. Consumers would be given the opportunity to try out different exercise options in the community, such as at local health clubs or wellness center, public swimming pools, and tracks. One objective of the intervention would be to help familiarize consumers with these places, so that they would feel comfortable continuing to use them once the intervention was over. Additionally, consumers would be introduced to the large number of national blind recreational/sports organizations, which include organizations for bowling, golf, skiing, beeper baseball, goalball, tandem biking, sailing, and bodybuilding. These organizations may provide consumers with additional opportunities for physical activity in their local communities.

Exposure to the topics and activities included in the intervention early in the rehabilitation process may help prevent inactivity and weight gain that is often associated with visual impairment. An essential message to get to consumers is the importance of remaining (or becoming) physically active despite visual impairment and the importance of a healthy diet in maintaining an appropriate weight. The intervention would provide consumers with the appropriate knowledge, experiences, and skills necessary to maintain a healthy lifestyle. Actually practicing healthy lifestyle habits after the conclusion of the intervention would be up to the consumer; the goal of the intervention would be to empower consumers and provide them with the tools necessary to do this.

Specific rehabilitation settings in which this intervention could be implemented are residential rehabilitation facilities and vocational rehabilitation (VR) agencies. A residential rehabilitation facility would provide an excellent setting for a health promotion intervention, as consumers would already be “on site,” making the intervention easily accessible to them. The

intervention could be incorporated into the regular classes that consumers attend at the center, or could be established as a separate class or "after hours" meeting.

Although health promotion is not the typical kind of assistance VR agencies provide, it would coincide with their overarching goal of assisting persons with disabilities to obtain (or maintain) employment. While evidence in this area is limited, one research study found that persons with blindness or low vision who are healthier are much more likely to be employed (Kirchner, Schmeidler, & Todorov, 1999). Health promotion activities will help participants feel better physically and mentally, which in turn should help them be better able to handle the demands of working.

At least two methods for implementing such a program would be available to VR agencies. A healthy living class could be offered, similar to what would be available at a residential facility. The class could be conducted by VR personnel or by a contracted vendor. Such a program is currently being pilot-tested in one state with VR consumers with mobility impairments (C. Ipsen, personal communication, June 15, 2006); a similar program specifically for persons with blindness or low vision could be developed. Another option would be for rehabilitation teachers to provide a healthy living curriculum to consumers as a component of the other services already being provided to them in their homes.

It would also be important for rehabilitation counselors to emphasize to their consumers the importance of healthy living and encourage their participation in health promotion activities. These health promotion activities could be another service option available to consumers (under the category of "other services"). Adding another service such as this may require additional resources of the VR agency (either in personnel time or monetary resources), but the potential

benefits in terms of consumers' improved health, increased quality of life, and employment would be worth the effort.

Community-Based Healthy Lifestyle Interventions

Health promotion interventions, also referred to as healthy lifestyle interventions, are becoming popular across the country with the increased incidence of overweight and obesity. Many communities are offering these types of programs for the general population. For example, Mississippi State University's Extension Service is offering a 12-week educational healthy lifestyle program in many counties across the state (Mississippi State University Extension Service, n.d.). This program, referred to as Mississippi in Motion, is available for a nominal fee to anyone residing in the community. It consists of an initial meeting where baseline information is gathered (e.g., weight, height, BMI, blood pressure), 10 weekly meetings during which education about healthy living topics is provided (e.g., healthy cooking, exercise, eating out smart), and a final meeting where participants' physiological information is again gathered. The goals of the program are for participants to increase their knowledge about healthy behaviors, increase their physical activity levels, and improve their eating habits. Participants are encouraged to form 5-member teams and the teams compete for prizes to be awarded at the end of the program. Similar types of programs are being offered nationwide.

Although persons with blindness or low vision would not be restricted from participating in community programs such as these, they may experience several obstacles to full participation, such as lack of transportation, lack of knowledge about exercise options, and inaccessible fitness facilities. Also, these community-based programs generally will not be prepared to provide even basic accommodations such as information in alternate media. Despite difficulties that participating in existing community based interventions may present for this

population, they do represent an important option to consider if available in one's community. One excellent benefit they offer is greater community involvement. Persons with blindness or low vision should contact the director of the program in his or her community prior to its start to request accommodations. Persons interested in participating would likely need to work with the program director to educate him or her about blindness or low vision and what their needs are. Another possibility would be for a local blindness advocacy group (which might be a VR agency or a consumer group) to partner with the community program to provide education and training about working with persons with blindness or low vision. The advocacy group could be available to answer questions from persons providing the intervention and could assist them in getting educational material in alternate media.

Consumer Groups

The population of adults with blindness or low vision is unique in that it has strong consumer groups, with a large number of members. These consumer groups represent another important option for health promotion activities for this population. Although these groups would not implement a formal intervention for their consumers, they could provide education about healthy habits and establish a support network for members. This support network would encourage healthy behaviors, which could lead to weight loss and improved health. Education could be provided in their already-established monthly publications, with a column devoted to a "healthy lifestyle" topic. State or local chapters of the organizations could establish support group meetings, and/or online support groups could be created. Members of local chapters would have the opportunity to exercise together, which can assist in maintaining exercise behavior. Compared to fully sighted persons, persons with blindness or low vision may face more

challenges to maintaining a healthy lifestyle. Having a support network that consists of others who understand those challenges would be very beneficial to them.

Summary

Health promotion is important for all people, given that an increase in physical activity and/or a decrease in weight are associated with fewer health problems and therefore decreased costs for healthcare and improved quality of life (Kolotkin et al., 2001; Oster et al., 1999). For persons with disabilities, these changes can also result in a decreased number of secondary conditions and increased functional abilities, again resulting in improved quality of life and a cost-savings that is expected to be substantial (Lollar & Crews, 2003). The United States government is one of the strongest supporters of health promotion activities, as evidenced by its *HP2010* plan. Given what we know about the challenges persons with blindness and low vision may face in terms of maintaining a healthy lifestyle and the poorer health status of this population, it is important that health promotion interventions be implemented that will allow for their full participation. Despite the recent focus on health promotion for persons with disabilities, this is a population that as of yet has not received attention. The challenges this group faces and the documented evidence of their disparities in two of *HP2010*'s leading health indicators (i.e., physical activity and overweight and obesity) necessitate the implementation of accessible health promotion activities and interventions for this population. The field of blindness rehabilitation should focus attention on this area, for the improved health and well-being of the population it serves.

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